



January 26, 2022

Mr. Mike Kelly
North Point Builders
1050 North Point Road, Suite 101
Baltimore, MD 21224

**Subject: Baltimore City Community College – Loop Road Retaining Wall
Additional Geotechnical Engineering Investigation
Baltimore, Maryland
KEI Project No. G22002**

Dear Mr. Kelly:

Kim Engineering, Inc. (KEI) has completed eight (8) standard penetration tests (SPT) soil borings along the centerline of the proposed retaining wall at the subject site. This work was done in response to a change of field conditions encountered during the installation of the first soldier pile at the west end of the wall. Based on the subsurface investigation done in 2019 that included three (3) soil borings for the retaining wall design the disintegrated rock and sound rock was expected at depths of about 30 to 33 feet at that location. However, the first drilled shaft advanced to a depth of 60 feet without much resistance. It should be noted that the three soil borings done for the original geotechnical investigation in 2019 were performed in an offset location since the actual wall centerline was not accessible at that time.

The subsurface investigation along the actual wall alignment was done between January 14 and January 24, 2022. A CME D-55 track mounted geotechnical drill rig was mobilized to the site to advance SPT borings using hollow stem augers. Eight SPT borings were drilled to refusal defined as 50 blows per 1 inch. Rock cores were extracted in two locations RW-3 and RW-5. The boring locations are shown on the attached site plan.

The original KEI recommendation for the wall support design was embedding the soldier pile minimum 5 feet or twice the diameter of pile into the disintegrated rock layer. The disintegrated rock is defined as native residual soil with SPT N-value above 60 blows per foot (bpf).

The subsurface investigation indicated deep soil profile at the west end of the wall location and shallower but variable depths to refusal on rock or boulders along most of the wall. The description of soil profiles is shown on attached boring logs. The 10-foot rock cores from RW-3 and RW-5 produced highly fractured and highly weathered shist rock. However, soil was



extracted in core barrels at both locations. This makes us to believe that shallower refusal depths are on boulders suspended in soil material. The intact and sound rock should not produce rock cores with soil. The pictures of rock cores are attached to this letter report.


We were not able to advance through rock cores and continue sampling below with hollow stem augers. We recommend additional testing using specialty casing that would allow penetrating through the first layer of hard material that could be boulders to verify conditions below.

The table below summarizes known depths to disintegrated rock layer for pile embedment.

Boring ID	Depth to Disintegrated Rock for Pile Support (ft)	Depth to Rock (ft)	Depth to Boulder (?) Needs Verification (ft)
RW-1	53	61.5	None
RW-1B	28	59	None
RW-2	Unknown	Unknown	9.4
RW-3	Unknown	Unknown	24
RW-4	Unknown	Unknown	20.5
RW-5	Unknown	Unknown	13.5
RW-6	Unknown	Unknown	25.1
RW-7	33	37.1	None

We appreciate the opportunity to be of service to you for this project. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

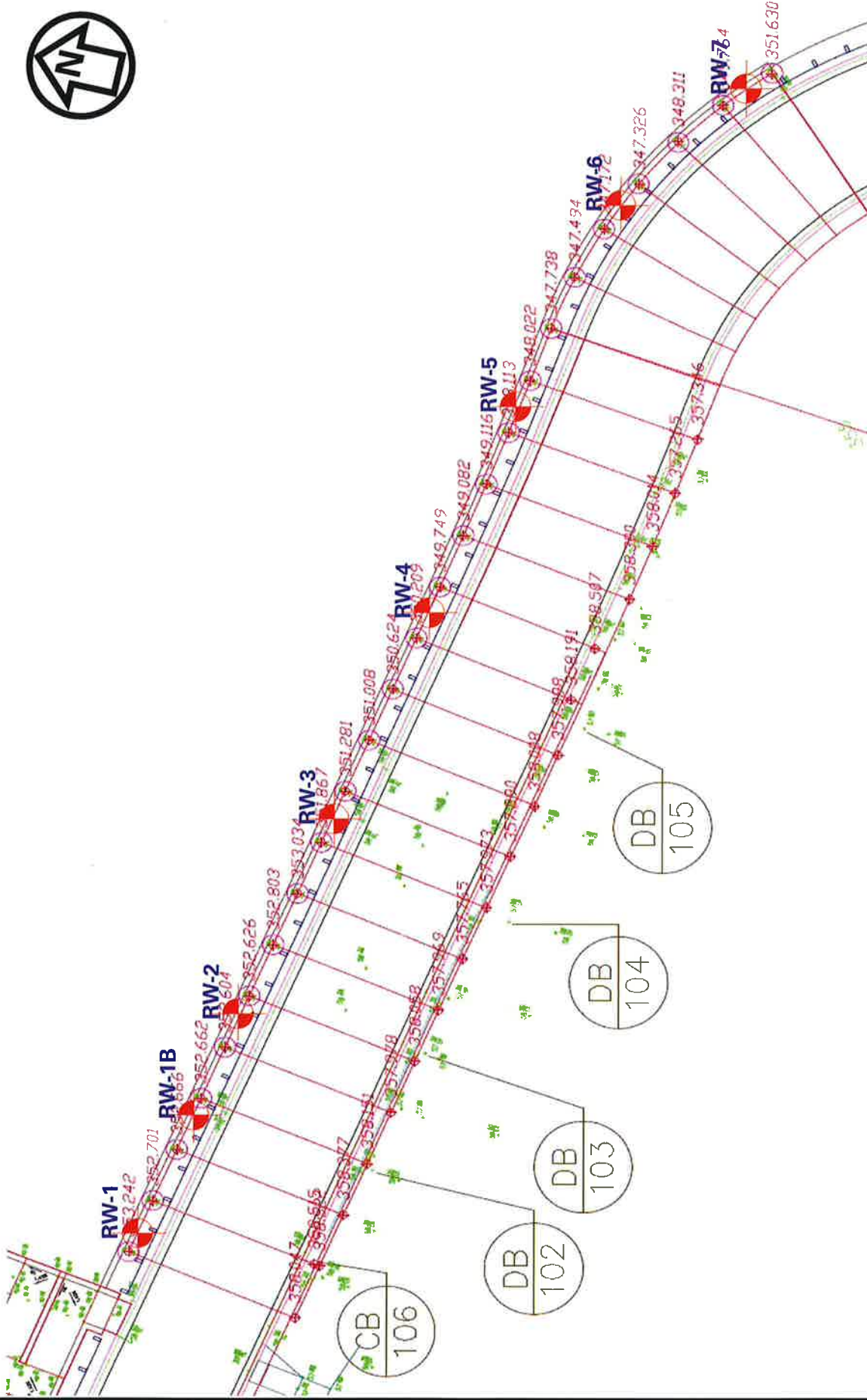
Very truly yours,
KIM ENGINEERING


Tom Labuda, P.E. P
Principal Engineer



- Enclosure:

1. Boring Location
2. Boring Logs
3. Rock Core Pictures



3916 VERO ROAD, SUITE K BALTIMORE, MD
21227

BORING LOCATION PLAN BCCC LOOP ROAD

2901 LIBERTY HEIGHTS AVE, BALTIMORE, MARYLAND

PROJECT NO.: G22002

SCALE: NTS

DATE: JANUARY 26, 2022

DRAWING NO. 1



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/18/22

COMPLETED 1/18/22

GROUND ELEVATION 353 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING --

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING --

NOTES caved @ 31.25

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	□ FINES CONTENT (%) □
									20	40	60	80
5			White, light brown, dark brown, greenish brown, dark gray, light gray, moist, stiff to hard, sandy SILT (ML) with rock fragments.	SS 1	78	4-5-8 (13)						
10				SS 2	89	7-7-7 (14)						
15				SS 3	89	8-8-9 (17)						
20				SS 4	89	7-15-20 (35)						
25			DISINTEGRATED ROCK classified as grayish brown, greenish brown, dark brown, light brown, light gray, moist, very dense, silty SAND (SM) with decomposed rock fragments.	SS 5	100	10-34-37 (71)						
30		324.50		SS 6	100	5-10-10 (20)						
35		319.50										

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KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1

PAGE 2 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
40			Grayish brown, greenish brown, dark brown, light brown, light gray, moist, medium dense to very dense, silty SAND (SM) with decomposed rock fragments. (continued)	SS 7	100	5-13-19 (32)						
45				SS 8	78	9-7-16 (23)						
50				SS 9	100	20-23-35 (58)						
55		299.50	DISINTEGRATED ROCK classified as grayish brown, greenish brown, dark brown, light brown, light gray, moist, very dense, silty SAND (SM) with decomposed rock fragments.	SS 10	100	50/5"						>>▲
60				SS 11	100	50/2"						>>▲
		291.40		SS 12	100	50/1"						>>▲
			Bottom of hole at 61.6 feet.									

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD GPI GPJ GINT US GDT 1/26/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1B

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/18/22

COMPLETED 1/19/22

GROUND ELEVATION 352.66 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING ---

NOTES caved @ 48

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	□ FINES CONTENT (%) □
									20	40	60	80
5			Greenish brown, dark gray, dark brown, moist, medium dense to dense, silty SAND (SM) with decomposed rock fragments.									
10				SS 1	100	5-9-9 (18)						
15		339.16	Greenish brown, gray, dark brown, moist, stiff, sandy SILT (ML).	SS 2	89	7-10-16 (26)						
20		334.16	Gray, white, greenish brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 3	100	15-23-30 (53)						
25				SS 4	89	13-20-40 (60)						
30		324.16	DISINTEGRATED ROCK classified as greenish brown, gray, dark brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 5	100	22-33-46 (79)						
35				SS 6	44	25-50						

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CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
40			DISINTEGRATED ROCK classified as greenish brown, gray, dark brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments. (continued)	SS 7	89	18-27-46 (73)						
45		309.16	Greenish brown, gray, brown, moist, dense to very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 8	100	15-20-30 (50)						
50				SS 9	100	17-22-33 (55)						
55		299.16	DISINTEGRATED ROCK classified as greenish brown, gray, brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 10	100	50/5"						
		293.96	Bottom of hole at 58.7 feet.	SS 11	100	50/3"						

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ.GPJ GINT US GDT 1/26/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-2

PAGE 1 OF 1

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/18/22

COMPLETED 1/18/22

GROUND ELEVATION 352.6 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲								
									PL	MC	LL						
									□ FINES CONTENT (%) □								
									20	40	60	80					
5			Gray, white, moist, very dense, silty SAND (SM) with rock fragment.	SS 1	78	17-27-22 (49)											
		344.10	DISINTEGRATED ROCK classified as gray, white, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 2	91	24-50/5"											
		343.20	Bottom of hole at 9.4 feet.														



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-3

PAGE 1 OF 1

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/19/22 COMPLETED 1/19/22

GROUND ELEVATION 351 ft HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY SE CHECKED BY TL

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Greenish brown, dark brown, gray, moist, medium dense, silty SAND (SM) with rock fragment.	SS 1	67	23-14-13 (27)						
10				SS 2	89	5-7-10 (17)						
15		337.50	Greenish brown, dark brown, gray, moist, stiff, sandy SILT (ML) with rock fragment.	SS 3	56	16-9-13 (22)						
		335.00	Rock fragments.									
20		333.00	Greenish brown, dark brown, gray, moist, hard, sandy SILT (ML) with rock fragment.	SS 4	33	22-20-19 (39)						
25		327.20	Gray, streaked and speckled white, fine to medium grained, moderately fractured, medium weathered, Schist.	SS 5	100	50/1"						
				RC 1	68 (0)							
				RC 2	100 (0)							
30		322.20	Gray, streaked and speckled white, fine to medium grained, moderately fractured, medium to fully weathered, Schist with about 13 inches of silty SAND (SM) with highly decomposed rock fragments at the bottom of rock core.	RC 3	65 (18)							
		317.20	Bottom of hole at 33.8 feet.									

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ GINT US.GDT 1/26/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-4

PAGE 1 OF 1

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/21/22

COMPLETED 1/21/22

GROUND ELEVATION 350 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

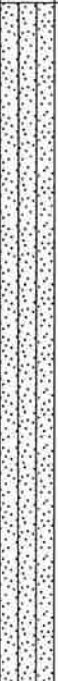

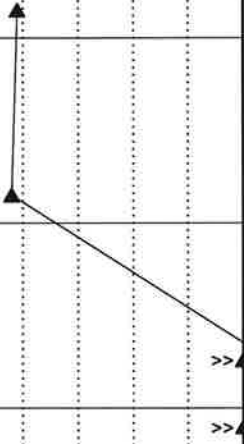



LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING --

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲					
									PL	MC	LL	□ FINES CONTENT (%) □		
									20	40	60		80	
5			Gray, greenish brown, dark gray, moist, medium dense, silty SAND (SM) with rock fragments.		SS 1	33	10-10-8 (18)							
10														
15														
20		331.50	DISINTEGRATED ROCK classified as silty SAND (SM) with rock fragments.		SS 3	80	50/5"							>>
		329.40	Bottom of hole at 20.6 feet.		SS 4	100	50/1"							>>

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ.GPJ GINT US GDT 1/26/22

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/21/22 **COMPLETED** 1/21/22

GROUND ELEVATION 348 ft **HOLE SIZE** 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING _____

LOGGED BY SE CHECKED BY TL

AT END OF DRILLING _____

NOTES

AFTER DRILLING —

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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5			Greenish brown, white, brown, moist, stiff, sandy SILT (ML).	X SS 1	100	3-4-9 (13)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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15		334.50	Gray, streaked and speckled white, fine to medium grained, slightly fractured, medium weathered, Schist.	RC 1	100 (73)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
20		329.50	DISINTEGRATED ROCK classified as greenish gray, streaked and speckled white, silty SAND (SM) with highly decomposed rock throughout the whole rock core run (60 in.).	RC 2	20 (0)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPI.GPJ GINT US.GDT 1/26/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-6

PAGE 1 OF 1

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/24/22

COMPLETED 1/24/22

GROUND ELEVATION 347 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING --

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING --

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Dark gray, white, brown, moist, stiff, sandy SILT (ML).									
10				SS 1	100	6-8-10 (18)						
15		333.50	Greenish brown, dark brown, gray, moist, dense, silty SAND (SM) with rock fragments.	SS 2	44	12-19-15 (34)						
20		328.50	Dark gray, white, moist, stiff, sandy SILT (ML).	SS 3	100	8-10-14 (24)						
25		323.50	DISINTEGRATED ROCK classified as gray, brown, moist, very dense, silty SAND (SM) with rock fragments.	SS 4	100	50/3"						>>
		321.90	Bottom of hole at 25.1 feet.	SS 5	100	50/1"						>>

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPI.GPJ GINT US.GDT 1/26/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-7

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/24/22

COMPLETED 1/24/22

GROUND ELEVATION 350 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING --

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING --

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Brown, gray, dark brown, black, moist, silty SAND (SM).									
		345.00	DISINTEGRATED ROCK classified as brown, gray, dark brown, black, moist, dense to very dense, silty SAND (SM).	SS 1	100	18-20-41 (61)						
10		341.50	Brown, gray, dark brown, moist, dense, silty SAND (SM).	SS 2	89	25-25-21 (46)						
15		336.50	White, gray, dark brown, moist, stiff, clayey SILT (CL-ML) with decomposed rock fragments.	SS 3	100	5-6-24 (30)						
20		331.50	Light brown, gray, dark brown, white, moist, dense to very dense, silty SAND (SM) with weathered rock fragments.	SS 4	100	18-25-35 (60)						
25				SS 5	44	17-22-22 (44)						
30				SS 6	100	10-10-23 (33)						
35		316.50		SS 7	100	50/4"						

Continued Next Page)

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

[illegible]

➤ Photo of Core Box

BCCC LOOP IMPROVEMENT KEI Project No.							
	FROM	TO	LENGTH	RECOVERY		RQD	
				LENGTH	%	LENGTH	%
RW-3	23.8	27.8	48'	32'	67.7%	0'	00%
	27.8 - 28.8	28.8	12'	12'	100%	0'	00%
	28.8 - 33.8	33.8	60'	39'	65%	18'	30%
RW-5	13.5	18.5	60'	44'	73.3%	28'	43.3%
	18.5	23.5	60'	20'	33%	0'	0%

RW-3	Top Row	1 st Run (23.8'-27.8') and 2 nd Run (27.8'-28.8')
	Second Row	3 rd Run (28.8'-33.8')
RW-5	Third Row	1 st Run (13.5'-18.5')
	Fourth Row	2 nd Run (18.5'-23.5')



*Geotechnical Engineering · Civil Engineering · Construction Material Testing
Test boring · Land Surveying · Construction Stakeout
Construction Inspection · Utility Locating · Land Planning*

BELTSVILLE | BALTIMORE | STERLING | ROCKVILLE

January 26, 2022

Updated on March 10, 2022

Mr. Mike Kelly
North Point Builders
1050 North Point Road, Suite 101
Baltimore, MD 21224

Subject: Baltimore City Community College – Loop Road Retaining Wall
Additional Geotechnical Engineering Investigation
Baltimore, Maryland
KEI Project No. G22002

Dear Mr. Kelly:

Kim Engineering, Inc. (KIM) has completed total eleven (11) standard penetration tests (SPT) soil borings including three (3) additional soil borings using specialty casing along the centerline of the proposed retaining wall at the subject site. This work was done in response to a change of field conditions encountered during the installation of the first soldier pile at the west end of the wall. Based on the subsurface investigation done in 2019 that included three (3) soil borings for the retaining wall design the disintegrated rock and sound rock was expected at depths of about 30 to 33 feet at that location. However, the first drilled shaft advanced to a depth of 60 feet without much resistance. It should be noted that the three soil borings done for the original geotechnical investigation in 2019 were performed in an offset location since the actual wall centerline was not accessible at that time.

The subsurface investigation along the actual wall alignment was done between January 14 and January 24, 2022, and the additional soil borings were performed between February 28 and March 2, 2022. A CME D-55 track mounted geotechnical drill rig was mobilized to the site to advance SPT borings using hollow stem augers and mud rotary methods. Initially, eight SPT borings were drilled to refusal defined as 50 blows per 1 inch and the rock cores were extracted in two locations RW-3 and RW-5. The soil borings RW-2, RW-3 and RW-5 were redrilled (named as RW-2A, RW-3A and RW-5A in boring logs) through the boulder using specialty casing. The boring locations are shown on the attached site plan.

The original KIM recommendation for the wall support design was embedding the soldier pile minimum 5 feet or twice the diameter of pile into the disintegrated rock layer. The disintegrated rock is defined as native residual soil with SPT N-value above 60 blows per foot (bpf).



The subsurface investigation indicated deep soil profile at the west end of the wall location and shallower but variable depths to refusal on rock or boulders along most of the wall. The description of soil profiles is shown on attached boring logs. The 10-foot rock cores initially extracted from RW-3 and RW-5 produced highly fractured and highly weathered shist rock. However, soil was extracted in core barrels at both locations. This makes us to believe that shallower refusal depths were on boulders suspended in soil material. The intact and sound rock should not produce rock cores with soil.

Further subsurface investigation was carried out at the soil borings RW-2, RW-3, and RW-5 locations with drilling through boulders to verify depths to continuous disintegrated rock and bedrock below. Soil borings advanced through boulders at these three locations indicated sound bedrock at depths of about 34.5 feet to 49 feet. The pictures of rock cores are attached to this letter report.

The table below summarizes known depths to disintegrated rock and bedrock below. For borings RW-4 and RW-6 corresponding depths were extrapolated from known depths in adjacent borings and should be used with caution. This information is for the structural engineer to review the wall design.

Boring ID	Depth to Disintegrated Rock (ft)	Depth to Rock (ft)	Depth to Boulder (ft)
RW-1	53	61.5	None
RW-1B	53	58	None
RW-2/RW-2A	34	39.5	9.4
RW-3/RW-3A	45	49	24
RW-4	Unknown (40 extrapolated)	Unknown (45 extrapolated)	20.5
RW-5/RW-5A	32	34.5	13.5
RW-6	Unknown (33 extrapolated)	Unknown (36 extrapolated)	25.1
RW-7	33	37.1	None

The soil boring logs attached herewith represents the depths and thickness of those layers encountered during drilling.



We appreciate the opportunity to be of service to you for this project. If you have any questions regarding this report, please do not hesitate to contact either of the undersigned.

Very truly yours,
KIM ENGINEERING, INC.

A handwritten signature in blue ink, appearing to read "Tom Labuda".

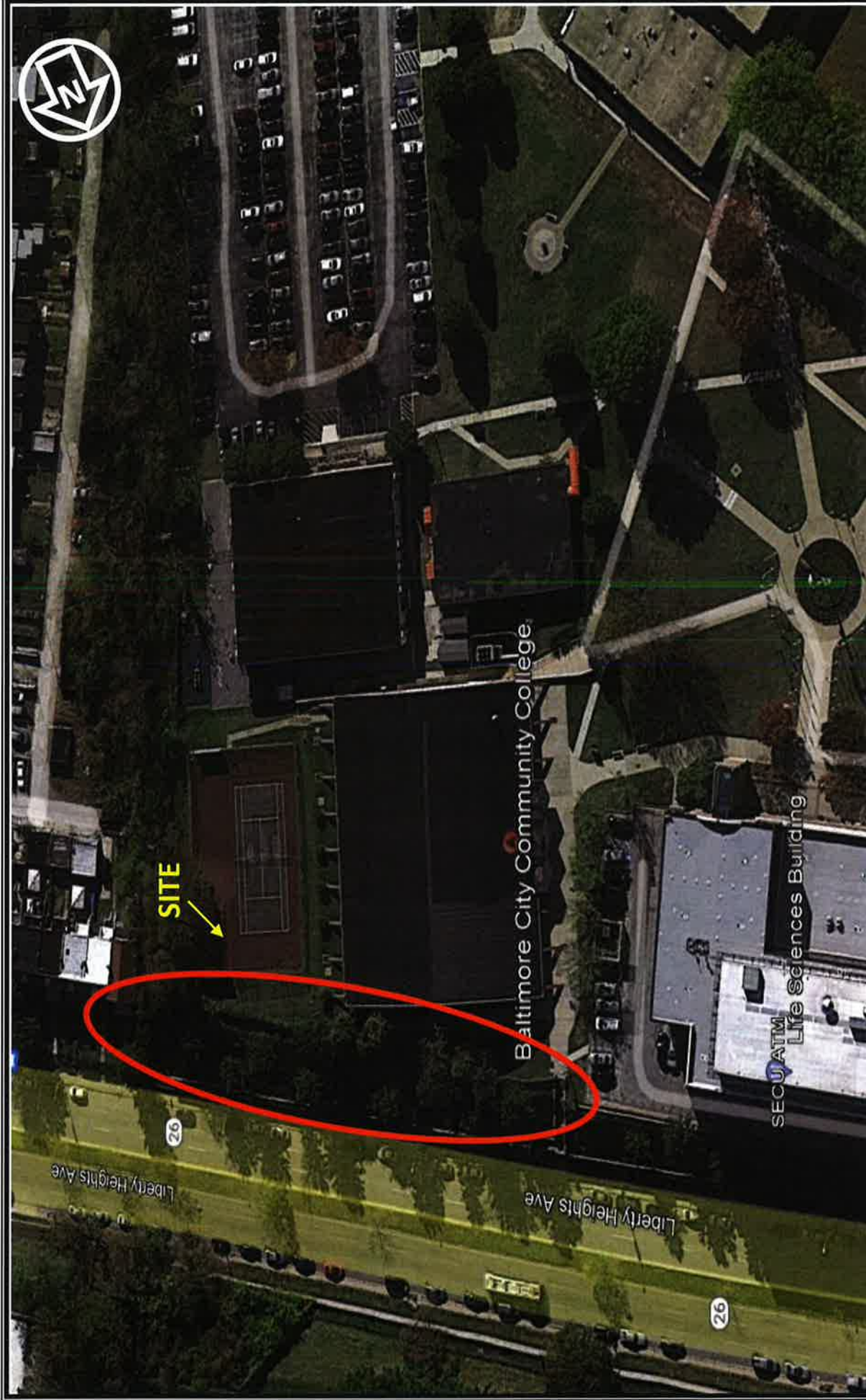
Tom Labuda, P.E. P.G.
Principal Engineer



- *Enclosure:*

1. *Boring Location Plan*
2. *Boring Logs*
3. *Rock Core Pictures*

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER
THE LAWS OF THE STATE OF MARYLAND, LICENSE NO.: PE 42702
EXPIRATION DATE: 10-12-2022.



Sourced by Google Map



3916 VERO ROAD, SUITE K BALTIMORE, MD
21227

SITE LOCATION PLAN

BCCC LOOP ROAD

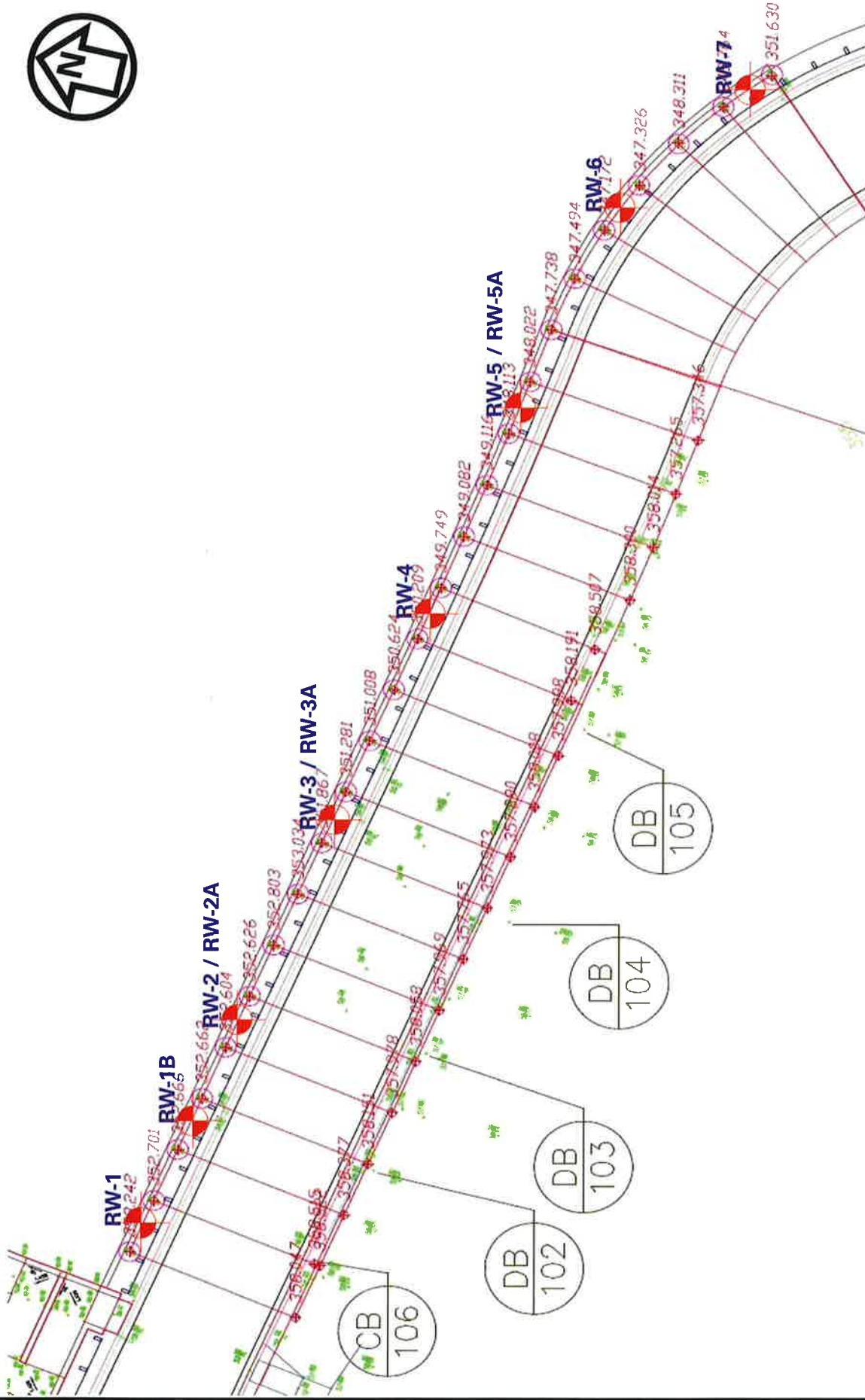
2901 LIBERTY HEIGHTS AVE, BALTIMORE, MARYLAND

PROJECT NO.: G22002

SCALE: NTS

DATE: JANUARY 26, 2022

DRAWING NO. 1



3916 VERO ROAD, SUITE K BALTIMORE, MD
21227

BORING LOCATION PLAN

BCCC LOOP ROAD

2901 LIBERTY HEIGHTS AVE, BALTIMORE, MARYLAND

PROJECT NO.: G22002

SCALE: NTS

DATE: MMARCH 9, 2022

DRAWING NO. 1



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1

PAGE 1 OF 2

CLIENT <u>North Point Builders</u>	PROJECT NAME <u>BCCC Loop Improvement Additional</u>
PROJECT NUMBER <u>G22002</u>	PROJECT LOCATION <u>Baltimore, MD</u>
DATE STARTED <u>1/18/22</u> COMPLETED <u>1/18/22</u>	GROUND ELEVATION <u>353 ft</u> HOLE SIZE <u>6"</u>
DRILLING CONTRACTOR <u>Kim Engineering Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>H.S.A</u>	AT TIME OF DRILLING <u>---</u>
LOGGED BY <u>SE</u> CHECKED BY <u>TL</u>	AT END OF DRILLING <u>---</u>
NOTES <u>caved @ 31.25</u>	AFTER DRILLING <u>---</u>

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	□ FINES CONTENT (%) □
									20	40	60	80
5			White, light brown, dark brown, greenish brown, dark gray, light gray, moist, stiff to hard, sandy SILT (ML) with rock fragments.									
10				X SS 1	78	4-5-8 (13)						
15				X SS 2	89	7-7-7 (14)						
20				X SS 3	89	8-8-9 (17)						
25				X SS 4	89	7-15-20 (35)						
30		324.50	DISINTEGRATED ROCK classified as grayish brown, greenish brown, dark brown, light brown, light gray, moist, very dense, silty SAND (SM) with decomposed rock fragments.	X SS 5	100	10-34-37 (71)						
35		319.50		X SS 6	100	5-10-10 (20)						

Continued Next Page)

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
40			Grayish brown, greenish brown, dark brown, light brown, light gray, moist, medium dense to very dense, silty SAND (SM) with decomposed rock fragments. (continued)	SS 7	100	5-13-19 (32)						
45				SS 8	78	9-7-16 (23)						
50				SS 9	100	20-23-35 (58)						
55		299.50	DISINTEGRATED ROCK classified as grayish brown, greenish brown, dark brown, light brown, light gray, moist, very dense, silty SAND (SM) with decomposed rock fragments.	SS 10	100	50/5"						>>▲
60				SS 11	100	50/2"						>>▲
		291.40	Bottom of hole at 61.6 feet.	SS 12	100	50/1"						>>▲

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ GINT US GDT 3/10/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1B

PAGE 1 OF 2

CLIENT <u>North Point Builders</u>	PROJECT NAME <u>BCCC Loop Improvement Additional</u>
PROJECT NUMBER <u>G22002</u>	PROJECT LOCATION <u>Baltimore, MD</u>
DATE STARTED <u>1/18/22</u> COMPLETED <u>1/19/22</u>	GROUND ELEVATION <u>352.66 ft</u> HOLE SIZE <u>6"</u>
DRILLING CONTRACTOR <u>Kim Engineering Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>H.S.A</u>	AT TIME OF DRILLING <u>---</u>
LOGGED BY <u>SE</u> CHECKED BY <u>TL</u>	AT END OF DRILLING <u>---</u>
NOTES <u>caved @ 48</u>	AFTER DRILLING <u>---</u>

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	□ FINES CONTENT (%) □
									20	40	60	80
5			Greenish brown, dark gray, dark brown, moist, medium dense to dense, silty SAND (SM) with decomposed rock fragments.									
10				X SS 1	100	5-9-9 (18)						
15		339.16	Greenish brown, gray, dark brown, moist, stiff, sandy SILT (ML).	X SS 2	89	7-10-16 (26)						
20		334.16	Gray, white, greenish brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	X SS 3	100	15-23-30 (53)						
25				X SS 4	89	13-20-40 (60)						
30		324.16	DISINTEGRATED ROCK classified as greenish brown, gray, dark brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	X SS 5	100	22-33-46 (79)						
35				X SS 6	44	25-50						

Continued Next Page)



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-1B

PAGE 2 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
40			DISINTEGRATED ROCK classified as greenish brown, gray, dark brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments. (continued)	SS 7	89	18-27-46 (73)						
45		309.16	Greenish brown, gray, brown, moist, dense to very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 8	100	15-20-30 (50)						
50				SS 9	100	17-22-33 (55)						
55		299.16	DISINTEGRATED ROCK classified as greenish brown, gray, brown, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 10	100	50/5"						>>
		293.96	Bottom of hole at 58.7 feet.	SS 11	100	50/3"						>>

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ (GPJ GINT US GDT 3/10/22)



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-2

PAGE 1 OF 1

CLIENT North Point Builders PROJECT NAME BCCC Loop Improvement Additional
PROJECT NUMBER G22002 PROJECT LOCATION Baltimore, MD
DATE STARTED 1/18/22 COMPLETED 1/18/22 GROUND ELEVATION 352.6 ft HOLE SIZE 6"
DRILLING CONTRACTOR Kim Engineering Inc. GROUND WATER LEVELS:
DRILLING METHOD H.S.A AT TIME OF DRILLING ---
LOGGED BY SE CHECKED BY TL AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Gray, white, moist, very dense, silty SAND (SM) with rock fragment.	SS 1	78	17-27-22 (49)						
		344.10	DISINTEGRATED ROCK classified as gray, white, moist, very dense, silty SAND (SM) with highly decomposed rock fragments.	SS 2	91	24-50/5"						
		343.20	Bottom of hole at 9.4 feet.									



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-2A

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 2/24/22

COMPLETED 2/24/22

GROUND ELEVATION 352.6 ft

HOLE SIZE 6.5

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY W.S

CHECKED BY TL

AT END OF DRILLING --

NOTES

AFTER DRILLING --

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Gray, white, moist, silty SAND (SM) with rock fragments. Auger probed with 6.25" to 4.0" then set mud tube and started running casing.									
		347.60	Advanced casing through Boulder.									
10												
		342.60	Advanced casing through the soil. Medium dense silty SAND (SM) with rock fragments.	SS 1	89	5-10-13 (23)						
		340.60	Hard advancing casing through Boulder.									
		339.30	Soft advancing casing through soil.									
15		338.60	Hard advancing casing through Boulder.									
		338.10	DISINTEGRATED ROCK classified as light gray, moist, very dense, silty SAND (SM) with fully weathered rock with trace mica.	SS 2	78	11-50/3"						
		337.30	Hard advancing casing through Boulder.									
		334.10	Soft advancing casing.									
20		333.10	Grayish green with white, moist, stiff, silty CLAY (CL-ML) with weathered rock, trace of mica and fine sand.	SS 3	67	7-9-11 (20)						
		331.60	Soft advancing casing.									
		328.90	Hard advancing casing.									
25		327.40	Soft advancing casing.	SS 4	0	50/1"						
30		323.10										

Continued Next Page)



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-2A

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CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
		321.60	Grayish green, moist, very stiff, SILT (ML) with weathered rock and traces of mica. (continued) Soft advancing casing.	SS 5	78	6-12-17 (29)						
35		318.60	DISINTEGRATED ROCK classified as grayish green, moist, very dense, weathered rock, trace mica and rock fragments. Extremely hard advancing casing.	SS 6	71	26-50/1"						
40		313.10	Gray, streaked and speckled white, fine to medium grained, highly fractured, medium weathered, Schist.	SS 7	0	50/1"						
				RC 1	68 (10)							
45		308.10	Gray, streaked and speckled white, fine to medium grained, highly fractured, medium weathered, Schist.	RC 2	85 (52)							
		303.10	Bottom of hole at 49.5 feet.									



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-3

PAGE 1 OF 1

CLIENT <u>North Point Builders</u>	PROJECT NAME <u>BCCC Loop Improvement Additional</u>
PROJECT NUMBER <u>G22002</u>	PROJECT LOCATION <u>Baltimore, MD</u>
DATE STARTED <u>1/19/22</u> COMPLETED <u>1/19/22</u>	GROUND ELEVATION <u>351 ft</u> HOLE SIZE <u>6"</u>
DRILLING CONTRACTOR <u>Kim Engineering Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>H.S.A</u>	AT TIME OF DRILLING <u>---</u>
LOGGED BY <u>SE</u> CHECKED BY <u>TL</u>	AT END OF DRILLING <u>---</u>
NOTES <u>---</u>	AFTER DRILLING <u>---</u>

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Greenish brown, dark brown, gray, moist, medium dense, silty SAND (SM) with rock fragment.	SS 1	67	23-14-13 (27)						
10				SS 2	89	5-7-10 (17)						
15		337.50	Greenish brown, dark brown, gray, moist, stiff, sandy SILT (ML) with rock fragment.	SS 3	56	16-9-13 (22)						
		335.00	Rock fragments.									
20		333.00	Greenish brown, dark brown, gray, moist, hard, sandy SILT (ML) with rock fragment.	SS 4	33	22-20-19 (39)						
25		327.20	Gray, streaked and speckled white, fine to medium grained, moderately fractured, medium weathered, Schist.	SS 5	100	50/1"						
				RC 1	68 (0)							
				RC 2	100 (0)							
30		322.20	Gray, streaked and speckled white, fine to medium grained, moderately fractured, medium to fully weathered, Schist with about 13 inches of silty SAND (SM) with highly decomposed rock fragments at the bottom of rock core.	RC 3	65 (18)							
		317.20	Bottom of hole at 33.8 feet.									

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GH.GPJ GINT US GDT 3/10/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-3A

PAGE 1 OF 2

CLIENT	North Point Builders	PROJECT NAME	BCCC Loop Improvement Additional
PROJECT NUMBER	G22002	PROJECT LOCATION	Baltimore, MD
DATE STARTED	3/3/22	COMPLETED	3/3/22
GROUND ELEVATION	351 ft	HOLE SIZE	6.5
DRILLING CONTRACTOR	Kim Engineering Inc.	GROUND WATER LEVELS:	
DRILLING METHOD	H.S.A	AT TIME OF DRILLING	---
LOGGED BY	WS	CHECKED BY	TL
NOTES		AT END OF DRILLING	---
		AFTER DRILLING	--

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Greenish brown, dark brown, gray, moist, medium dense, silty SAND (SM) with rock fragments. Auger probed with 6.25" to 4.0" then set mud tube and started running casing at 3'.									
10												
15		337.50	Soft advancing casing.									
20												
		329.40	Hard advancing casing.									
25		327.00 326.90	Very Dense Disintegrated Rock. (NO Recovery)	SS 1	0	50/1"						>>▲
			Soft advancing casing.									
30		322.00 321.60	DISINTEGRATED ROCK classified as grayish green, moist, very dense, silty SAND (SM) with rock fragments	SS 2	100	50/5"						>>▲

Continued Next Page)



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-3A

PAGE 2 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
			Soft advancing casing. (continued)									
35		317.00	DISINTEGRATED ROCK classified as grayish green, moist, very dense, silty SAND (SM) with rock fragments	SS 3	71	8-13-50/5"						>>▲
		315.60	Soft advancing casing.									
40		312.00	DISINTEGRATED ROCK classified as grayish green, moist, very dense, silty SAND (SM) with rock fragments	SS 4	75	13-50/2"						>>▲
		311.10	Very hard advancing casing.									
		308.40	Soft advancing casing.									
45		307.00	DISINTEGRATED ROCK classified as grayish green, moist, very dense, silty SAND (SM) with rock fragments	SS 5	100	16-50/5"						>>▲
		306.10	Soft advancing casing.									
		305.80	Hard advancing casing.									
			Very hard advancing casing.									
50		302.00	Extremely hard advancing casing.									
			Gray, streaked and speckled white, fine grained, lightly fractured, Schist.	RC 1	100 (83)							
55		297.00	Gray, streaked and speckled white, fine grained, lightly fractured, Schist.	RC 2	93 (90)							
		292.00	Bottom of hole at 59.0 feet.									

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ.GPJ GINT US.GDT 3/10/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-4

PAGE 1 OF 1

CLIENT	North Point Builders	PROJECT NAME	BCCC Loop Improvement Additional
PROJECT NUMBER	G22002	PROJECT LOCATION	Baltimore, MD
DATE STARTED	1/21/22	COMPLETED	1/21/22
DRILLING CONTRACTOR	Kim Engineering Inc.	GROUND ELEVATION	350 ft
DRILLING METHOD	H.S.A	HOLE SIZE	6"
LOGGED BY	SE	CHECKED BY	TL
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING ---	
		AT END OF DRILLING --	
		AFTER DRILLING --	

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Gray, greenish brown, dark gray, moist, medium dense, silty SAND (SM) with rock fragments.									
10				SS 1	33	10-10-8 (18)						
15				SS 2	67	5-6-10 (16)						
20		331.50	DISINTEGRATED ROCK classified as silty SAND (SM) with rock fragments.	SS 3	80	50/5"						
		329.40	Bottom of hole at 20.6 feet.	SS 4	100	50/1"						

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD.GPJ GINT US.GDT 3/10/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-5

PAGE 1 OF 1

CLIENT	North Point Builders	PROJECT NAME	BCCC Loop Improvement Additional
PROJECT NUMBER	G22002	PROJECT LOCATION	Baltimore, MD
DATE STARTED	1/21/22	COMPLETED	1/21/22
GROUND ELEVATION	348 ft	HOLE SIZE	6"
DRILLING CONTRACTOR	Kim Engineering Inc.	GROUND WATER LEVELS:	
DRILLING METHOD	H.S.A	AT TIME OF DRILLING	---
LOGGED BY	SE	CHECKED BY	TL
AT END OF DRILLING	---	AFTER DRILLING	--
NOTES			

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Greenish brown, white, brown, moist, stiff, sandy SILT (ML).									
10				SS 1	100	3-4-9 (13)				▲		
15		334.50	Gray, streaked and speckled white, fine to medium grained, slightly fractured, medium weathered, Schist.	RC 1	100 (73)							
20		329.50	DISINTEGRATED ROCK classified as greenish gray, streaked and speckled white, silty SAND (SM) with highly decomposed rock throughout the whole rock core run (60 in.).	RC 2	20 (0)							
		324.50	Bottom of hole at 23.5 feet.									

GEOTECH BH PLOTS BCCC LOOP ROAD IMPROVEMENT ADD GPI GPJ GINT US GDT 3/10/22



KIM ENGINEERING, INC.
Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-5A

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 2/28/22

COMPLETED 2/28/22

GROUND ELEVATION 348 ft

HOLE SIZE 6.5

DRILLING CONTRACTOR Kim Engineering Inc.

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY W.S

CHECKED BY TL

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Greenish brown, white, brown, moist, stiff, sandy SILT (ML).									
10			Auger probed with 6.25" to 4.0" then set mud tube and started running casing at 8'.									
15		335.00	Hard advancing casing.									
		332.40	Soft advancing casing.									
20		328.50	Grayish green, moist, stiff, silty CLAY (CL- ML), trace mica and weathered rock and rock fragments.	SS 1	67	4-7-13 (20)						
		327.00	Soft advancing casing.									
		326.00	Hard advancing casing.									
		324.50	Soft advancing casing.									
25		323.50	DISINTEGRATED ROCK classified as grayish green, moist, hard, silty CLAY (CL- ML), trace mica and weathered rock.	SS 2	88	19-23-50/4"						
		322.20	Soft advancing casing.									
		321.70	Hard advancing casing.									
		320.00	Soft advancing casing.									
30		318.50										

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Baltimore, Maryland

BORING NUMBER RW-5A

PAGE 2 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
		317.00 316.50	DISINTEGRATED ROCK classified as grayish green, moist, hard, silty CLAY (CL- ML), with trace of mica and weathered rock fragments. <i>(continued)</i> Soft advancing casing. Very hard advancing casing.	SS 3	89	19-23-41 (64)						
35		313.50	Gray, streaked and speckled white, fine grained, lightly fractured, slightly weathered, Schist.	SS 4		50/1"						
				RC 1	60 (38)							
40		308.50	Gray, streaked and speckled white, fine grained, lightly fractured, Schist.	RC 2	98 (80)							
		303.50	Bottom of hole at 44.5 feet.									



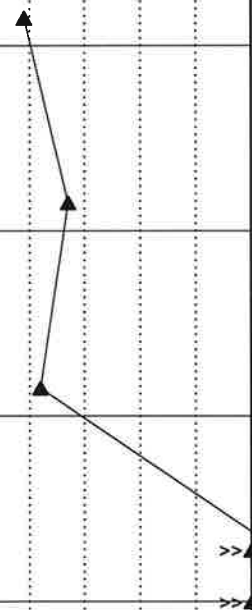
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Consulting Geotechnical Engineers
Baltimore, Maryland

BORING NUMBER RW-6

PAGE 1 OF 1

CLIENT North Point Builders PROJECT NAME BCCC Loop Improvement Additional
PROJECT NUMBER G22002 PROJECT LOCATION Baltimore, MD
DATE STARTED 1/24/22 COMPLETED 1/24/22 GROUND ELEVATION 347 ft HOLE SIZE 6"
DRILLING CONTRACTOR Kim Engineering Inc. GROUND WATER LEVELS:
DRILLING METHOD H.S.A AT TIME OF DRILLING ---
LOGGED BY SE CHECKED BY TL AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Dark gray, white, brown, moist, stiff, sandy SILT (ML).									
10				SS 1	100	6-8-10 (18)						
15		333.50	Greenish brown, dark brown, gray, moist, dense, silty SAND (SM) with rock fragments.	SS 2	44	12-19-15 (34)						
20		328.50	Dark gray, white, moist, stiff, sandy SILT (ML).	SS 3	100	8-10-14 (24)						
25		323.50	DISINTEGRATED ROCK classified as gray, brown, moist, very dense, silty SAND (SM) with rock fragments.	SS 4	100	50/3"						
		321.90	Bottom of hole at 25.1 feet.	SS 5	100	50/1"						





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Baltimore, Maryland

BORING NUMBER RW-7

PAGE 1 OF 2

CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additional

PROJECT NUMBER G22002

PROJECT LOCATION Baltimore, MD

DATE STARTED 1/24/22

COMPLETED 1/24/22

GROUND ELEVATION 350 ft

HOLE SIZE 6"

DRILLING CONTRACTOR Kim Engineering

GROUND WATER LEVELS:

DRILLING METHOD H.S.A

AT TIME OF DRILLING ---

LOGGED BY SE

CHECKED BY TL

AT END OF DRILLING ---

NOTES

AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲			
									PL	MC	LL	
									□ FINES CONTENT (%) □			
									20	40	60	80
5			Brown, gray, dark brown, black, moist, silty SAND (SM).									
		345.00	DISINTEGRATED ROCK classified as brown, gray, dark brown, black, moist, dense to very dense, silty SAND (SM).	SS 1	100	18-20-41 (61)						
10		341.50	Brown, gray, dark brown, moist, dense, silty SAND (SM).	SS 2	89	25-25-21 (46)						
15		336.50	White, gray, dark brown, moist, stiff, clayey SILT (CL-ML) with decomposed rock fragments.	SS 3	100	5-6-24 (30)						
20		331.50	Light brown, gray, dark brown, white, moist, dense to very dense, silty SAND (SM) with weathered rock fragments.	SS 4	100	18-25-35 (60)						
25				SS 5	44	17-22-22 (44)						
30				SS 6	100	10-10-23 (33)						
35		316.50		SS 7	100	50/4"						>>>


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CLIENT North Point Builders

PROJECT NAME BCCC Loop Improvement Additonal

PROJECT NUMBER G22002

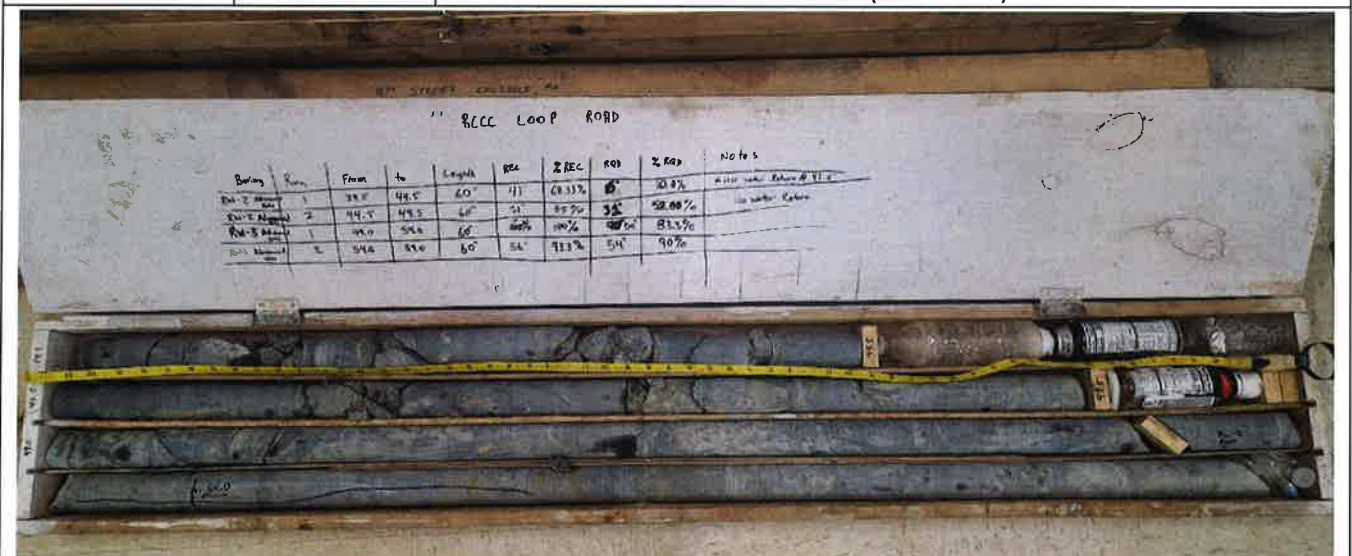
PROJECT LOCATION Baltimore, MD

DEPTH (ft)	GRAPHIC LOG	ELEVATION	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲				
									PL	MC	LL		
									□ FINES CONTENT (%) □				
									20	40	60	80	
			DISINTEGRATED ROCK classified as light brown, gray, dark brown, white, moist, dense to very dense, silty SAND (SM) with weathered rock fragments. (continued)										
		312.90	Bottom of hole at 37.1 feet.	SS 8	100	50/1"							

➤ Photo of Core Box




RW-3	Top Row	1 st Run (23.8'-27.8') and 2 nd Run (27.8'-28.8')
	Second Row	3 rd Run (28.8'-33.8')
RW-5	Third Row	1 st Run (13.5'-18.5')
	Fourth Row	2 nd Run (18.5'-23.5')



RW-2A	Top Row	1 st Run (39.5'-44.5')
	Second Row	2 nd Run (44.5'-49.5')
RW-3A	Third Row	1 st Run (49.0'-54.0')
	Fourth Row	2 nd Run (54.0'-59.0')

BCCC Loop - RW-5A									
Boring	Run	From	To	Length	REL	% REC	ROP	% RVE	
RW-5A Run 1	1	34.5'	39.5'	50'	36"	10%	28'	38.83%	
RW-5A Run 2	2	39.5'	44.5'	50'	59"	98.33%	48'	80%	



RW-5A	Top Row	1 st Run (34.5'-39.5')
	Second Row	2 nd Run (39.5'-44.5')